

# Lynx 220Y series



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Y axis added 6 inch /  
8 inch Compact  
Turning Center

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**Lynx 220Y series**  
Lynx 220YA / YC Lynx  
220LYA / LYC Lynx  
220LSYA / LSYC

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Basic Information

Structure  
Cutting  
Performance

Detailed Information

Standard / Options  
Applications  
Diagrams  
Specifications

Customer Support  
Service



# Lynx 220Y series

Lynx Y series is a new model with additional Y axis on the existing Lynx models and enables to complete complex machining using only one setup. Easy and high precision off-center machining is possible and the productivity has been highly improved through outstanding reduction of both cutting time and non-cutting time for complex shapes machining.



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Various customer parts with Y axis complex machining



### Easy machining of complex shapes with One setup

Additional Y axis and sub spindle help to make machining of parts with diverse and complex shapes faster and easier

### High productivity through minimizing non-cutting time

Fast, accurate and high rigidity roller type LM guides are applied on the all axes and quick rotation of turret with servo driven indexing motor maximize the productivity.

### Enhanced user-friendliness for easier and more efficient product operation

User-friendly operation panel configurations, EZ Guide i and EOP(Easy Operation Package) can make easy and comfortable to use various features of the product



## Structure

Stable high rigidity bed structure and application of roller type LM guide for all axes realize continued high rigidity and high accuracy of the machine

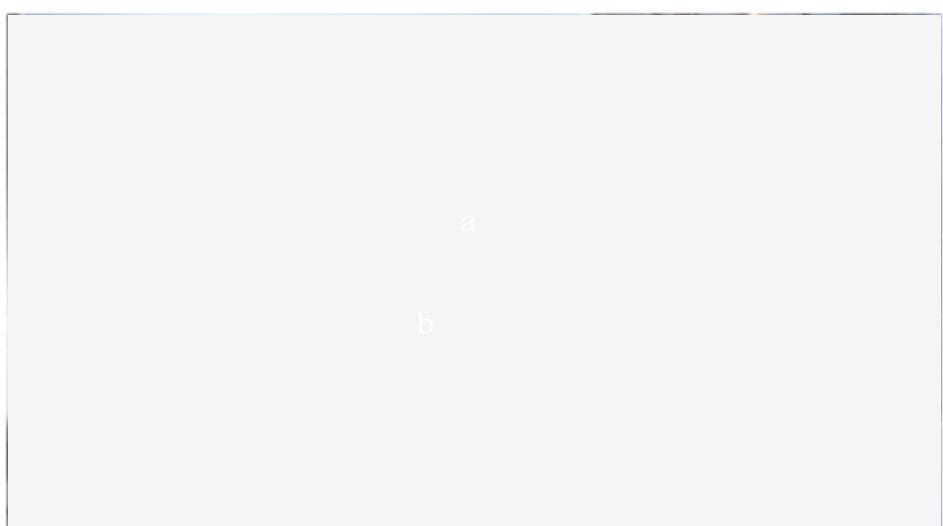


Model	Chuck size	Travel distance			Rapid traverse		
		X axis	Y axis	Z axis	X axis	Y axis	Z axis
Lynx 220YA / YC	6 / 8 inch	205 mm (8.1 inch)	105 mm (±52.5 mm) (4.1 inch ±2.05 inch)	350 mm (13.8 inch)	30 m/min (1181 ipm)	10 m/min (394 ipm)	36 m/min (1417 ipm)
Lynx 220LYA / LYC				560 mm (22 inch)			
Lynx 220LSYA / LSYC				560 mm (22 inch)			



## Machining area &amp; Variation

Lynx 220Y series offers 3 models depending on the difference of turning length and the presence or absence of sub spindle



Model	Max. Turning diameter(a)	Max. Turning length(b)	Sub spindle
Lynx 220YA / YC	300 mm* (11.8 inch)	300 mm (11.8 inch)	X
Lynx 220LYA / LYC		510 mm (20.1 inch)	X
Lynx 220LSYA / LSYC		510 mm (20.1 inch)	O

\* Max. Turning diameter is 236 mm in case that optional 16 station turret is mounted

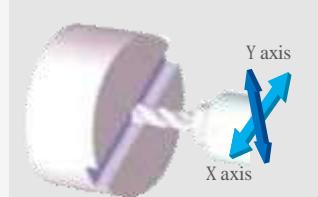


## High performance Y axis complex machining

Free operation in all directions of the rotary milling tool using Y axis control perform a variety of complex shape machining easily with high accuracy

### Y axis Travel

**105( $\pm 52.5$ )mm  
(4.1 (+-2.05) inch)**



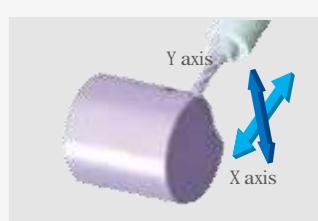
On-center face groove



Poly-side machining

### Y axis Rapid Traverse

**10m/min  
(394 ipm)**



Off-center side groove



X&Y axis circular interpolation

## Multi-tasking functions

Combined functions of spindle, sub spindle, Y axis and milling realize two or more general machines' manufacturing productivities

### Reduced production lead time

**25%**

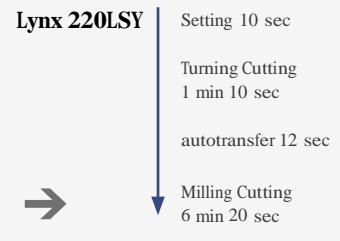
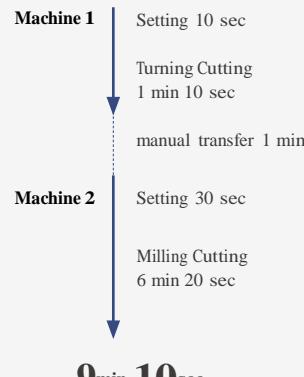


Workpiece : Machinery Component

Material : Aluminum (AL7075)

Workpiece size : Ø70 x 35 mm

Cutting tool : 16 set



**Productivity  
25 % Improved**

\* Cutting time curtailment : Tool change time & Rapid traverse rate Calculation

Lynx Series added with SY-axis, enabling One Set-up  
**Save time, reduce labor, high accuracy !**

2 set-up / 2 operators



1 set-up / 1 operator



Lynx 220LSY



## Spindle

DOOSAN's best-in-class high performance spindle allows heavy duty machining of large diameter parts as well as high speed high precision machining

## Main Spindle

Powerful spindle motor is capable of 0.001 degree high accuracy C axis control and can provide large bar diameter capacity until 65 mm bar working diameter.

## Max. Spindle Speed

**6000 r/min**

## Spindle Motor Power

**15 kW (20 Hp)**

\* Model : Lynx 220YA/LYA/LSYA

C axis

Model	Max. spindle speed	Spindle motor power	Max. spindle torque
Lynx 220YA / LYA / LSYA	6000 r/min	15 kW (20 Hp)	127 N·m (94 lbf ft)
Lynx 220YC / LYC / LSYC	4500 r/min	15 kW (20 Hp)	169 N·m (125 lbf ft)

## Sub Spindle (Lynx 220LSYA / C)

C axis synchronization between main spindle and sub spindle is possible and various machining functions including turning, milling and cutting on the sub spindle can be performed using a single set up

## Max. sub spindle speed

**6000 r/min**

## Min. C axis indexing angle

**0.001 deg. (360 degree indexing).**

## Tailstock (Lynx 220LYA / C)

Widely spaced guideways and heavy-duty design of the tailstock body ensure outstanding rigidity and precision. In particular, the programmable type tailstock offers EZ function\* for automatic work piece location setting.

## Quill bore taper

**MT#4**

## Convenience Features

**EZ function\* option**

\* available at the programmable type tailstock only





## Turret

Servo driven indexing raise the reliability and BMT type milling turret ensures high rigidity.

### Servo driven Turret

High torque servo motor controls rotational acceleration and deceleration of turret and clamping/unclamping operations and its excellent dividing position brings continual high machining accuracy.

Number of  
Tool stations  
**12 ea (16ea option)**

Indexing time  
(1 station swivel)

**0.11s**



### Servo driven Turret

High torque servo motor controls rotational acceleration and deceleration of turret and clamping/unclamping operations and its excellent dividing position brings continual high machining accuracy.

Max. Rotary  
Tool Speed  
**6000 r/min**



### Cutting Performance

#### OD turning (turning dia. 88 mm (3.5 inch))

Cutting speed	Feedrate	Cutting depth	Chip revolal rate	
210 m/min (8268 ipm)	0.5 mm/rev (0.02 ipr)	4 mm (0.16 inch)	399 cm <sup>3</sup> /min (24.3 inch <sup>3</sup> /min)	

#### U-drilling (2 axis)

U drill dia.	Spindle speed	Cutting speed	Feedrate	
Ø 63 mm (2.5 inch)	1011 r/min	200 m/min (7874 ipm)	0.15 mm/rev (0.006 ipr)	

#### Drilling

Tool dia.	Milling spindle speed	Cutting speed	Feedrate	
Ø 12 mm (0.5 inch)	3184 r/min	120 m/min (4724 ipm)	0.20 mm/rev (0.008 ipr)	

#### Endmill

Tool dia.	Cutting speed	Feedrate	Cutting depth	
Ø 12 mm (0.5 inch)	60 m/min (2362 ipm)	300 mm/rev (11.8 ipr)	14 mm (0.6 inch)	

#### Tapping

Tool	Milling spindle speed	Cutting speed	Feedrate	
M14 X P1.75	387 r/min	17 m/min (669 ipm)	1.75 mm/rev (0.07 ipr)	

\* The results, indicated in this catalogue are provides as example. They may not be obtained due to differences in cutting conditions and environmental conditions during measurement.



## Standard / Optional Specifications

### Basic Information

Structure  
Cutting  
Performance

### Detailed Information

Standard / Options  
Applications  
Diagrams  
Specifications

### Customer Support Service

Diverse optional devices and features are available to meet specific customer requirements.

Standard Optional X N/A

NO.	Description	Features	Lynx 220YA	Lynx 220YC	Lynx 220LYA	Lynx 220LYC	Lynx 220LSYA	Lynx 220LSYC
1	Chuck	6 inch	●	X	●	X	●	X
2		8 inch	○	●	○	●	○	●
3		10 inch	X	○	X	○	X	○
4		No chuck	○	○	○	○	○	○
5		5 inch (for sub spindle)	X	X	X	X	●	●
6	Jaw	Soft jaw	●	●	●	●	●	●
7		Hard jaw	○	○	○	○	○	○
8	Chucking Option	Dual pressure chucking	○	○	○	○	○	○
9		Chuck clamp confirmation	○	○	○	○	○	○
10	Tailstock	Manual	X	X	●	●	X	X
11		Programmable	X	X	○	○	X	X
12	Coolant Pump	1.5 bar	●	●	●	●	●	●
13		Increase Power (4.5/7/10/14.5/20 bar)	○	○	○	○	○	○
14	Coolant options	Chuck coolant	○	○	○	○	○	○
15		TSC for sub spindle	X	X	X	X	○	○
16		Coolant chiller	○	○	○	○	○	○
17		Oil skimmer	○	○	○	○	○	○
18		Coolant pressure switch	○	○	○	○	○	○
19		Coolant level switch	○	○	○	○	○	○
20		Coolant gun	○	○	○	○	○	○
21	Chip disposal options	Side type chip conveyor	○	○	○	○	○	○
22		Rear type chip conveyor	○	○	○	○	○	○
23		Chip bucket	○	○	○	○	○	○
24		Air blower	○	○	○	○	○	○
25		Mist collector interface	○	○	○	○	○	○
26		Integrated mist collector	○	○	○	○	○	○
27	Measuring & automation	Tool setter (manual/automatic)	○	○	○	○	○	○
28		Part catcher with parts box	○	○	○	○	○	○
29		Part catcher with parts conveyor	○	○	○	○	○	○
30		Workpiece ejector	X	X	X	X	○	○
31		Auto door	○	○	○	○	○	○
32		Bar feeder interface	○	○	○	○	○	○
33		Robot interface	○	○	○	○	○	○
34	Others	Tool load monitoring system	○	○	○	○	○	○
35		Linear scale	○	○	○	○	○	○
36		Signal tower	○	○	○	○	○	○
37		Air gun	○	○	○	○	○	○
38		Automatic power off	○	○	○	○	○	○

#### Oil skimmer option

The oil skimmer keeps coolant and lubricant isolated from each other for extending life cycle of coolant.



#### Tool setter option

The tool setter facilitates setting of tools, and fast and precise length compensation of worn tools

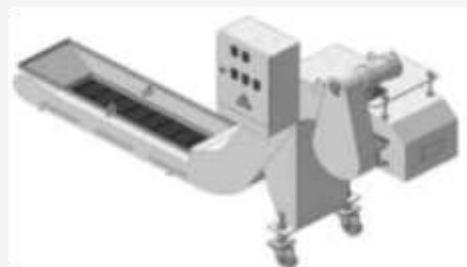


#### Mist collector option

The mist collector absorbs airborne oil vapor and fine dusts in the system to improve working environment.



#### Chip conveyor option



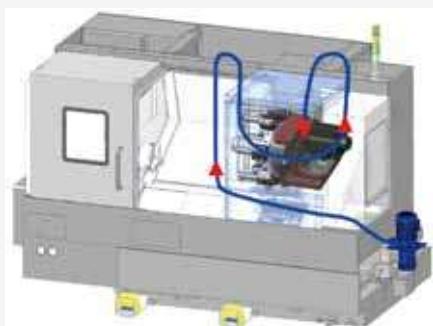
Chip conveyor type	Material	Description
Hinged belt	Steel	Most typical type of chip conveyor. Appropriate for steel materials generating chips of length of 30 mm or more.
Screw	Steel	Chip conveyor with smallest footprint. Demands 80% of footprint comparing to hinged belt.
Magnetic scrapper	Cast iron	Chip conveyor with magnet equipped: Appropriate for cast iron workpieces generating fine chips.

#### Part catcher option

The part catcher automatically accepts parts completed of machining, and ejects them out of the system.

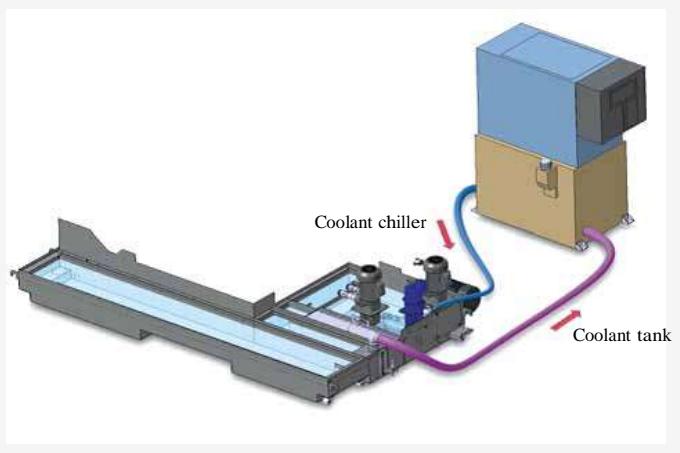


#### Coolant system



#### Coolant chiller option

Detachable coolant chiller is recommended to keep thermal error minimal and get higher machining precision.



Coolant pump	Output pressure (bar)	std./opt.
Pump1	1.5	std.
Pump2	4.5	
Pump3	7	
Pump4	10	opt.
Pump5	14.5	
Pump6	20	



## DOOSAN-FANUC i

## User-friendly OP Panel

## Basic Information

Structure  
Cutting  
Performance

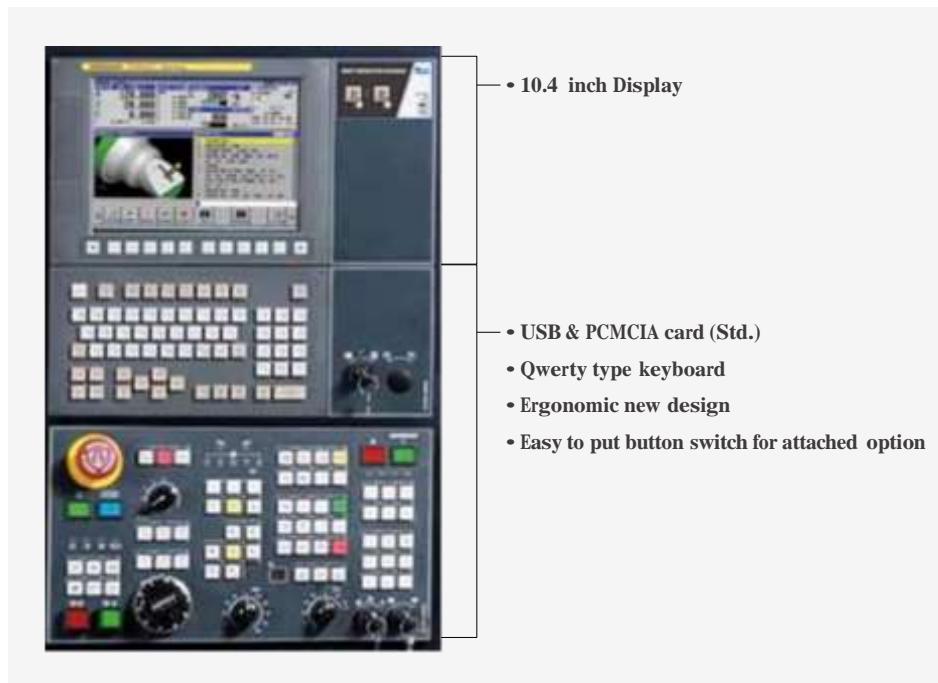
## Detailed Information

Standard / Options  
Applications  
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## Customer Support

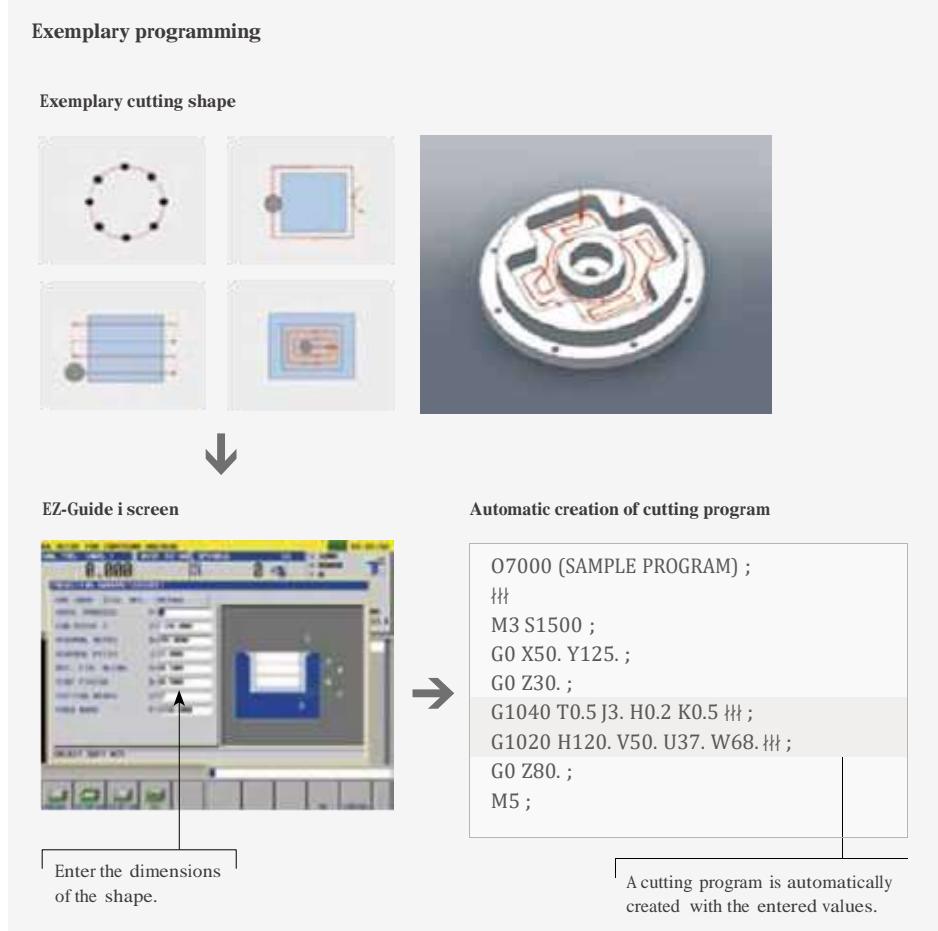
Service

Apply Fanuc CNC on the  
Doosan machine to fulfill  
best performance and  
productivity

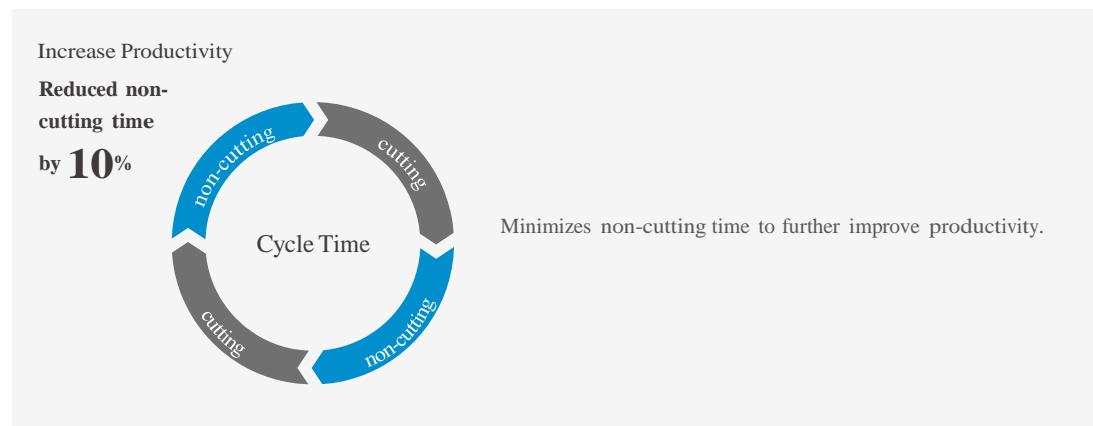


## EZ-Guide i

Using the DOOSAN EZ-Guide i, users can create a cutting program for any desired shape, including patterns, by entering figures only.

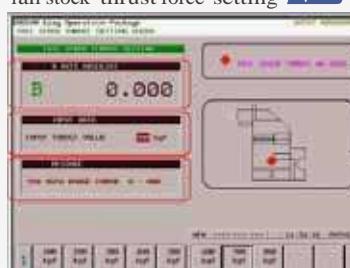


## Productivity Improvement



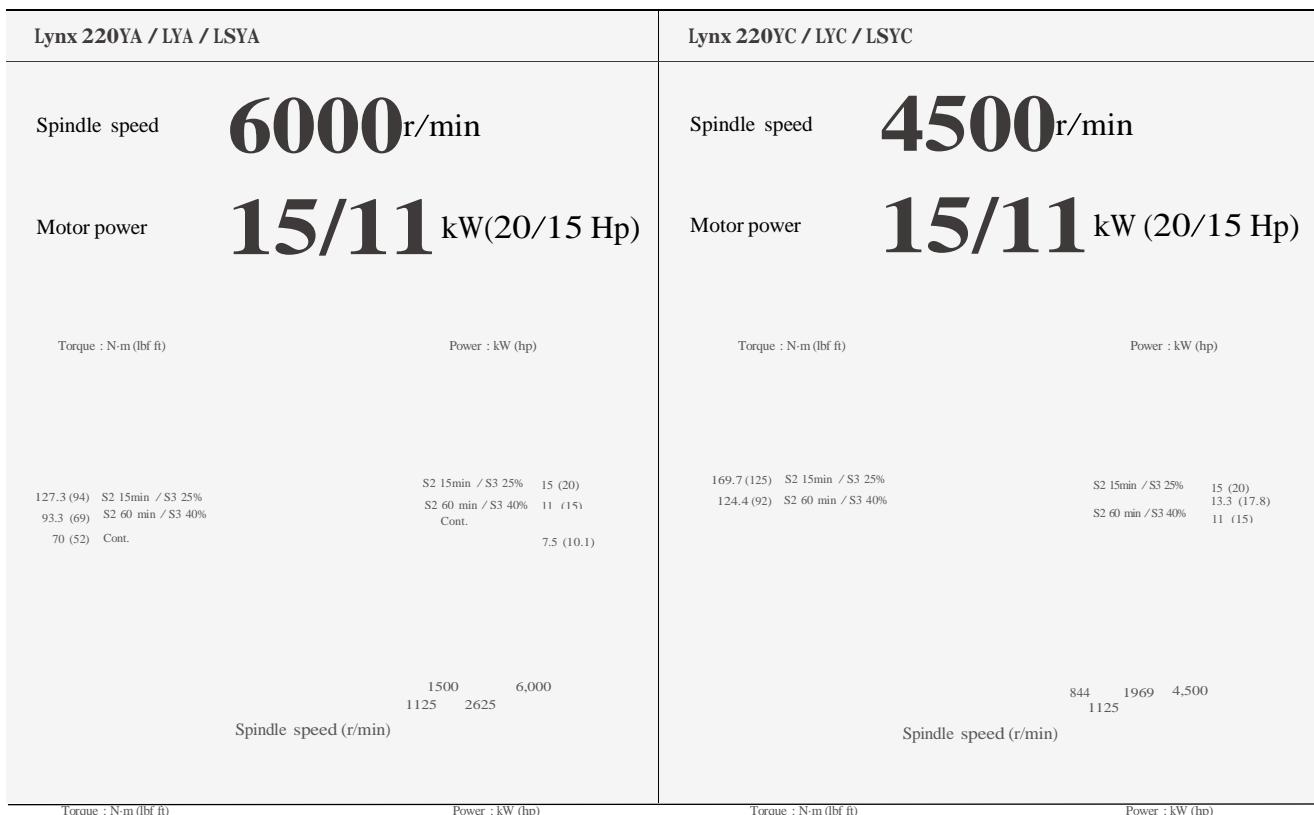
## Easy Operation Package

<b>G Code / M Code list</b>  <p>Operator can check the meaning of each G-code / M-code.</p>	<b>Calculator</b>  <p>Operator can calculate numerical formula in relation to arc and hole easily.</p>
<b>Turret maintenance and service screen</b>  <p>The condition and service procedures of the sensors are provided for easy maintenance and servicing of major units.</p>	<b>Operation rate</b>  <p>Function allows users to easily keep track of machine operating hours and the number of completed parts.</p>

<b>Tool load monitoring <small>option</small></b>  <p>This function detects overload on tools, caused by wear and damage, and triggers an alarm to minimize damage.</p>	<b>Tail stock thrust force setting <small>option</small></b>  <p>This function allows users to easily setup tailstock thrust force on the screen.</p>
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## Spindle Power – Torque Diagram

## Main Spindle



## Sub Spindle

## Rotary Tool Motor



## External Dimensions

External Dimensions					
	A	B	C	D*	E*
Lynx 220YA / C	2460 (96.9)	1710 (67.3)	1920 (75.6)	3459 (136.2)	775 (30.5)
Lynx 220LYA / LSYA	2850 (112.2)	1710 (67.3)	1920 (75.6)	3896(153.4)	780 (30.7)
Lynx 220LYC / LSYC	2880 (113.4)	1710 (67.3)	1920 (75.6)	3926 (154.6)	780 (30.7)

\* D, E : on the basis of fitting hinged belt type chip conveyor

chip conveyor

□ ပြောင်းလောက်

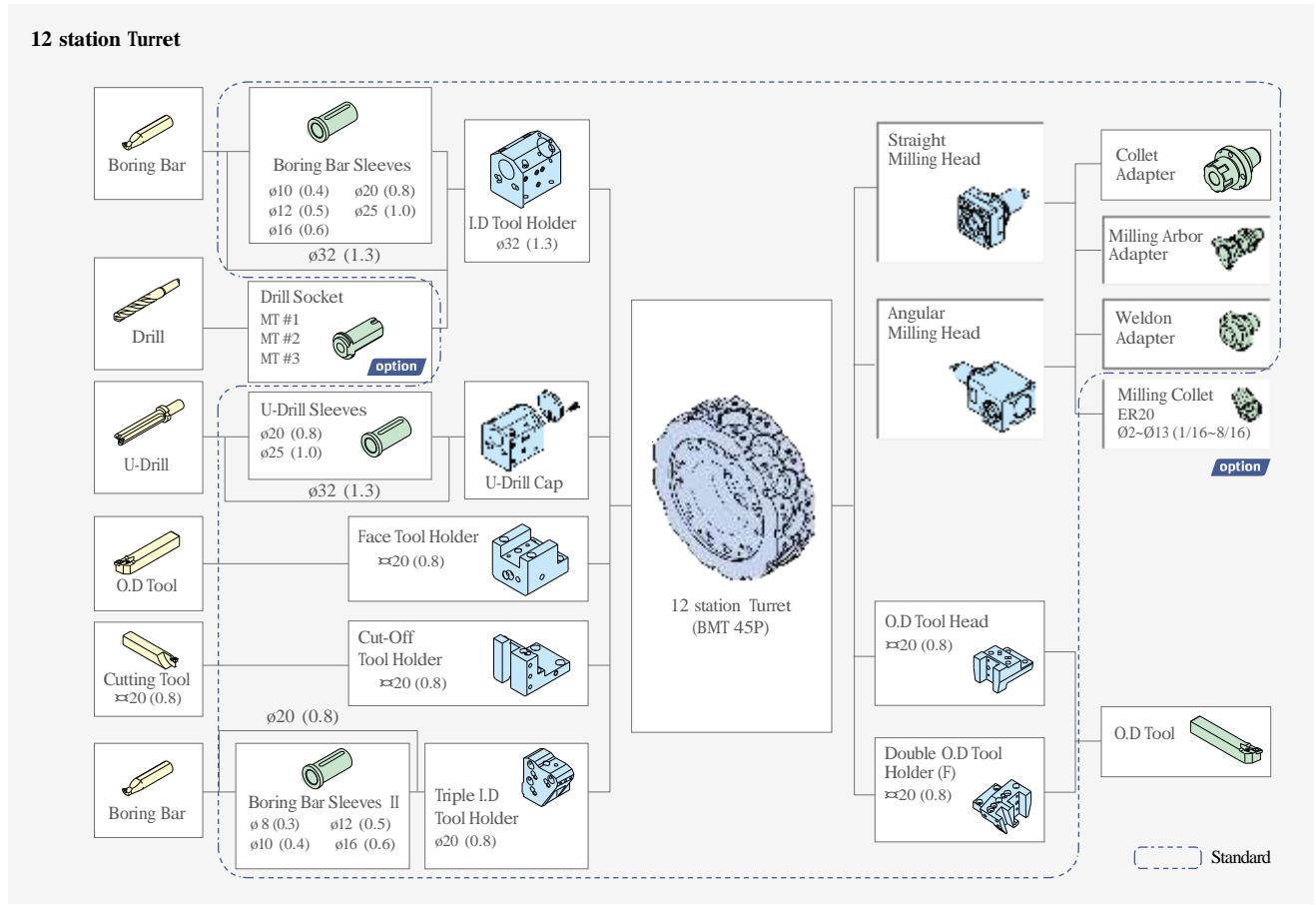
Unit: mm (inch)

## Tooling system

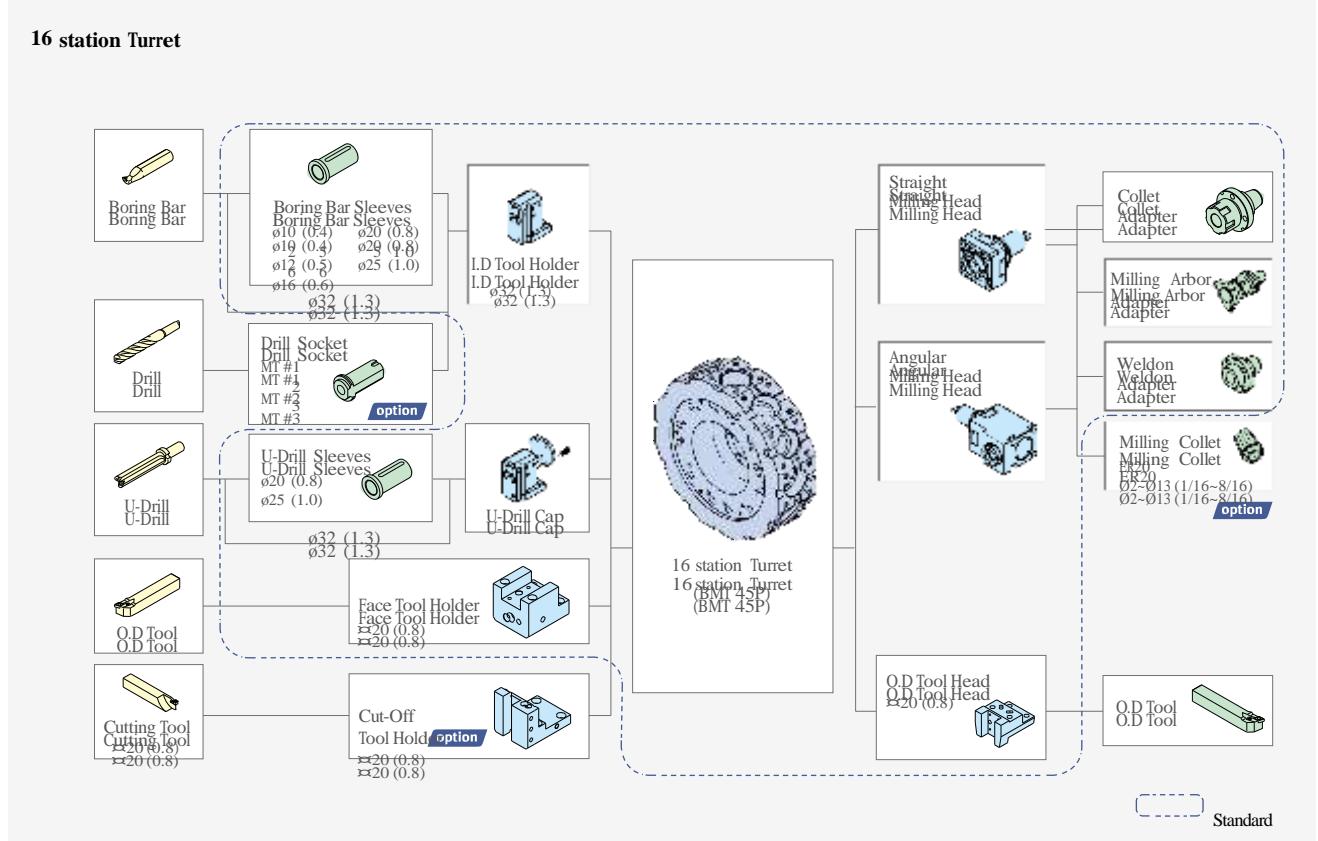
## Lynx 220Y / LY

Unit: mm (inch)

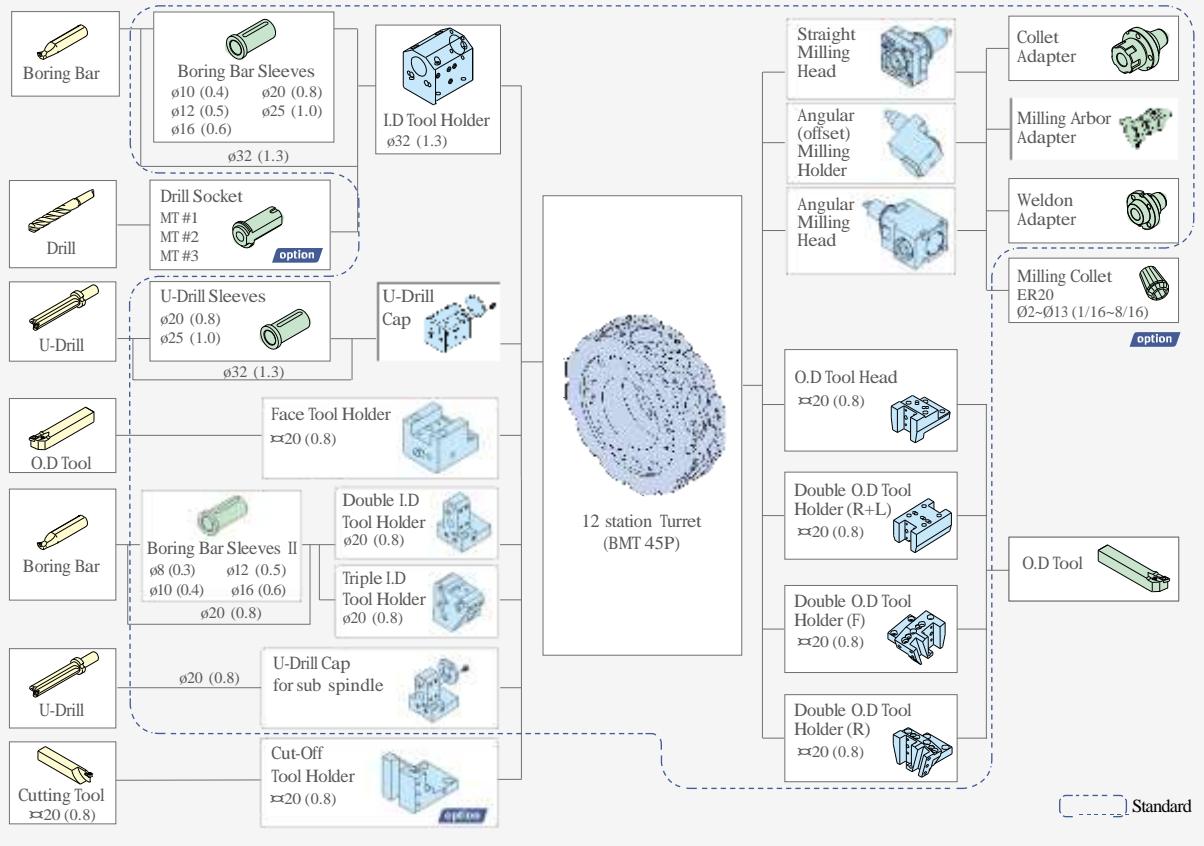
## 12 station Turret



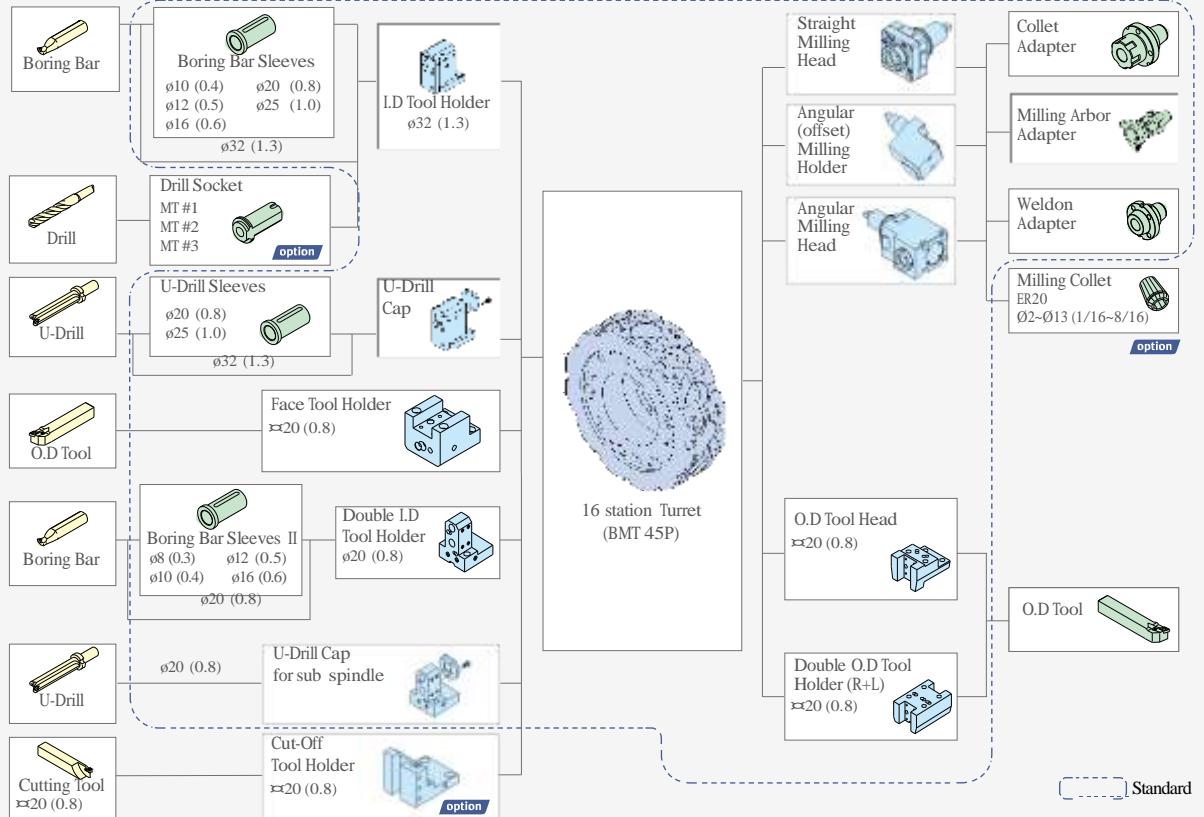
## 16 station Turret



## 12 station Turret

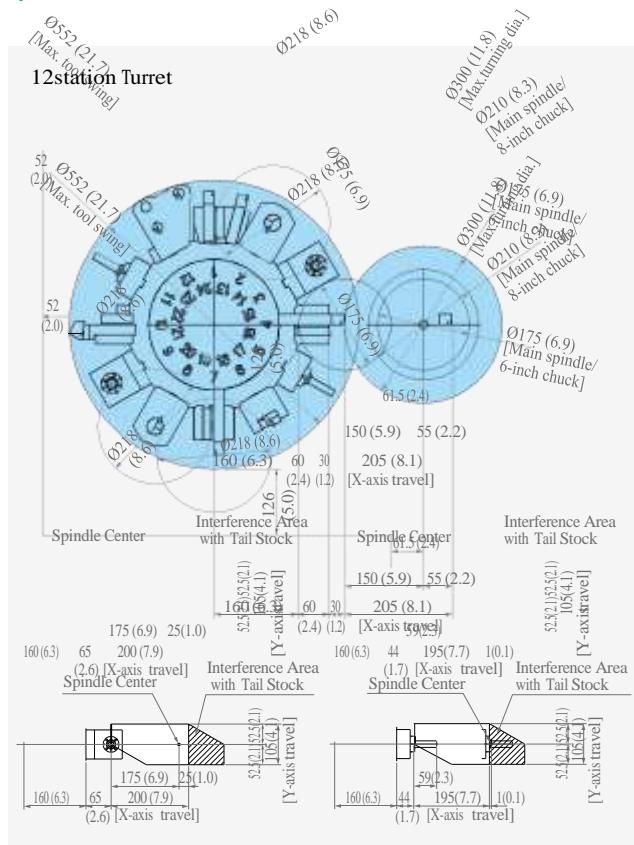


## 16 station Turret



## Tool interference diagram

## Lynx 220Y / LY

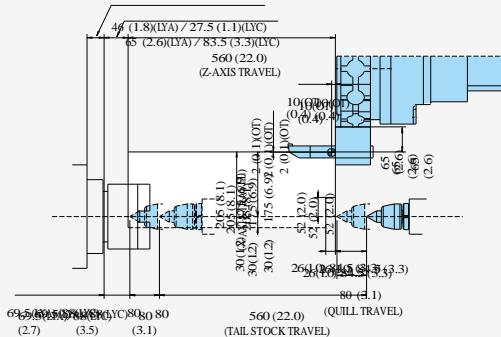


## Working Range

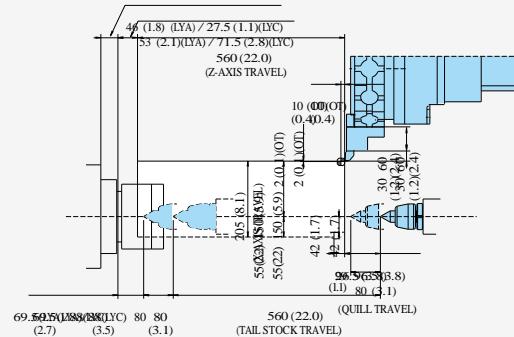
## Lynx 220LYA / LYC

Unit: mm (inch)

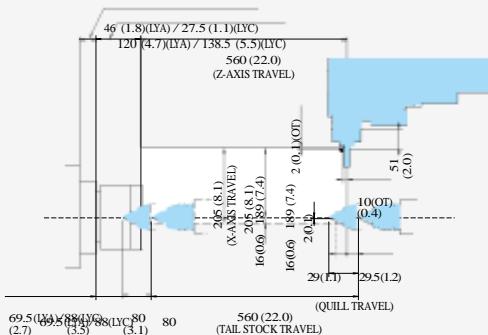
## ID Tool



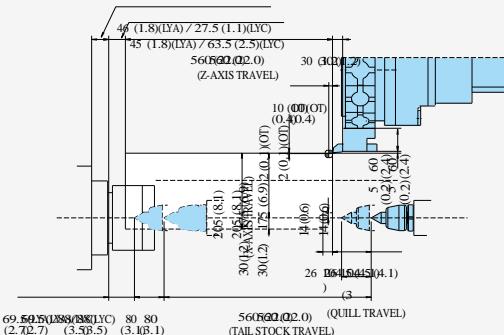
## OD Tool



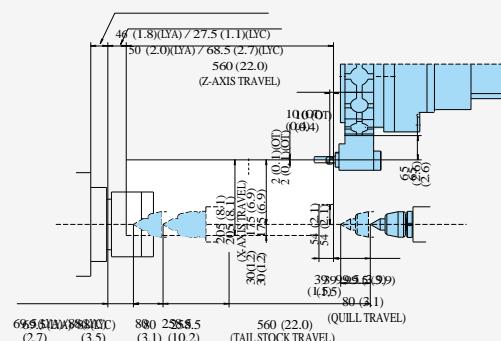
## Straight Milling



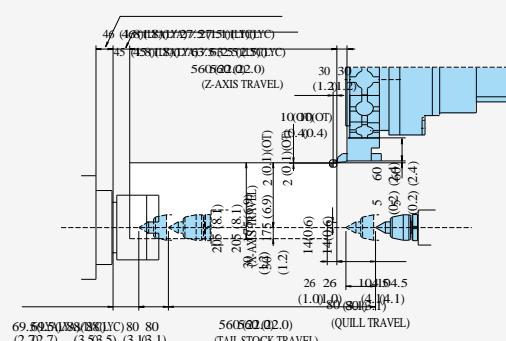
## Face Tool



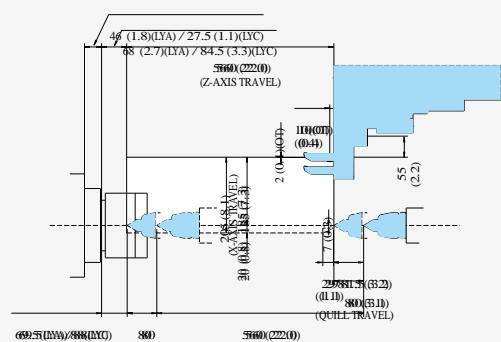
## Angular Milling



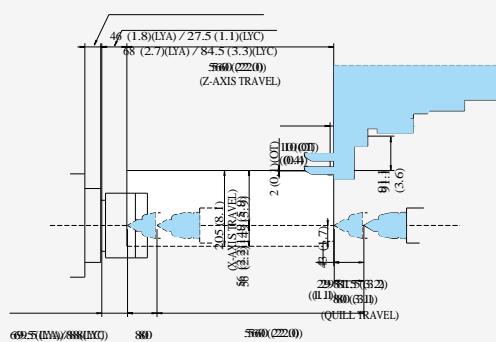
## Cut Off Holder



## Triple ID Tool



## Triple ID Tool



## Basic Information

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Cutting  
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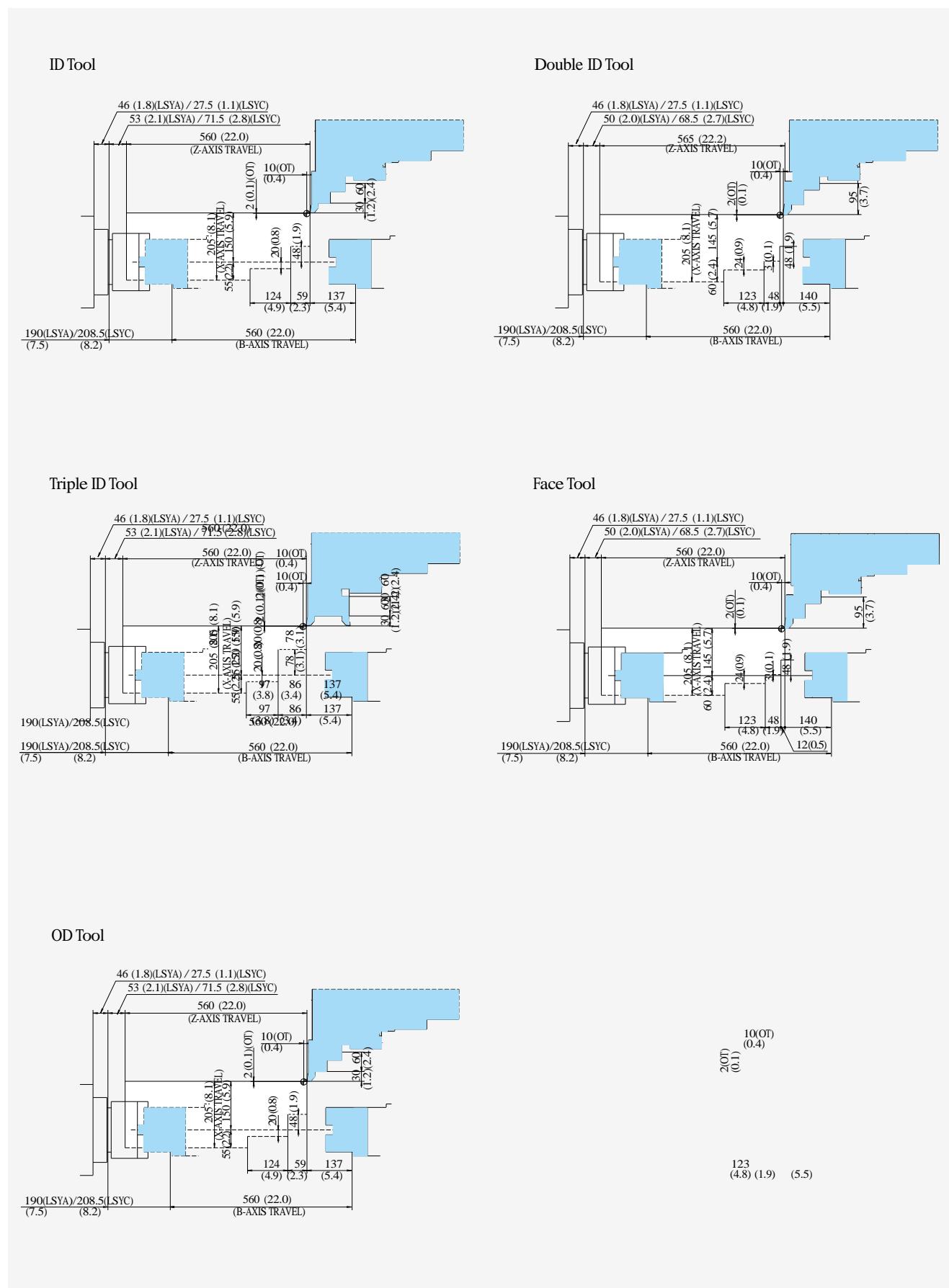
## Customer Support

Service

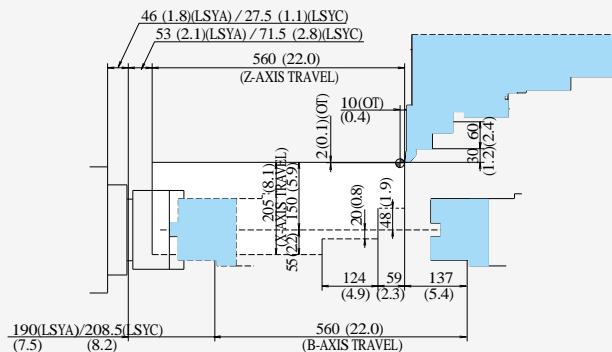
## Working Range

## Lynx 220LSYA / LSYC

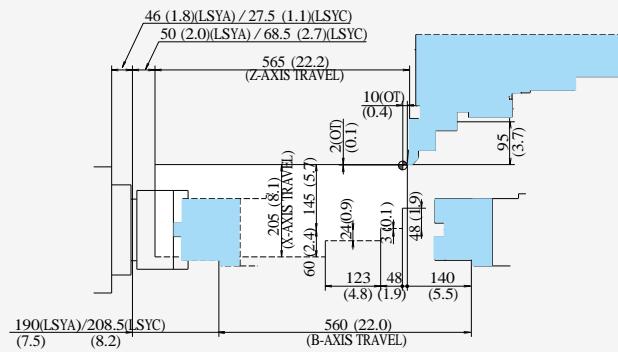
Unit: mm (inch)



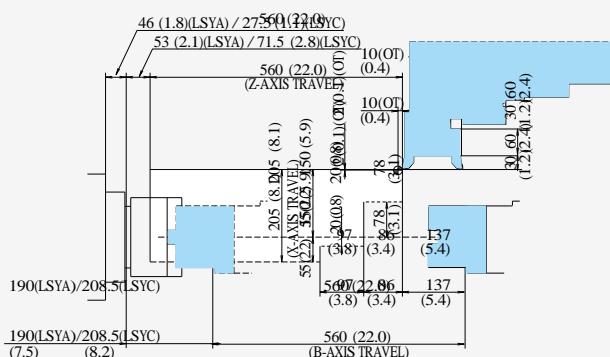
### Double OD Tool [Main / Sub]



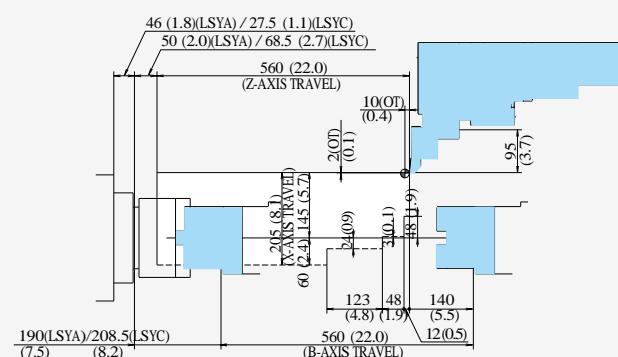
## Straight Milling



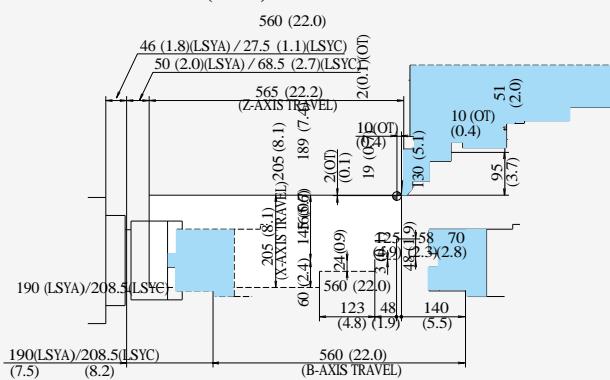
## Angular Milling



### Angular Milling (offset)



## Double OD Tool (Main)



## Machine specifications

## Basic Information

Structure  
Cutting  
Performance

## Detailed Information

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## Customer Support Service



Lynx 220Y

Features	Unit	Lynx 220YA	Lynx 220YC	Lynx 220LYA	Lynx 220LYC	Lynx 220LSYA	Lynx 220LSYC
Capacity	Swing over bed	mm (inch)			600 (23.6)		
	Swing over saddle	mm (inch)			400 (15.7)		
	Recom. Turning diameter	mm (inch)	170 (6.7)	210 (8.3)	170 (6.7)	210 (8.3)	170 (6.7)
	Max. Turning diameter	mm (inch)			300 (11.8)		
	Max. Turning length	mm (inch)		300 (11.8)		510 (20.1)	
	Chuck size	inch	6	8	6	8	6
Travels	Travel distance	X-axis	mm (inch)		205 (8.1)		
		Y-axis	mm (inch)		105(±52.5)		
		Z-axis	mm (inch)	350 (13.8)		560 (22.0)	
Feedrates	Rapid Traverse Rate	X-axis	m/min (ipm)		30 (1181)		
		Y-axis	m/min (ipm)		10 (394)		
		Z-axis	m/min (ipm)		36 (1417)		
Spindle	Max. Spindle speed	r/min	6000	4500	6000	4500	6000
	Main spindle motor power	kW(Hp)		15 / 11 (20 / 15) (30min. / cont.)			
	Max. Spindle Torque for Turning	N·m (lbf ft)	127 (94)	169 (125)	127 (94)	169 (125)	127 (94)
	Spindle nose	ASA	A2-5	A2-6	A2-5	A2-6	A2-5
	Spindle bearing diameter (Front)	mm (inch)	90 (3.5)	110 (4.3)	90 (3.5)	110 (4.3)	90 (3.5)
	Spindle through hole diameter	mm (inch)	61 (2.4)	76 (3.0)	61 (2.4)	76 (3.0)	61 (2.4)
	Min. spindle Indexing angle(C-axis)	deg			0.001		
Sub spindle	Max. Spindle speed	r/min				6000	
	Main spindle motor power	kW(Hp)				5.5 / 3.7 (7.5 / 5) (30min. / cont.)	
	Max. Spindle Torque for Turning	N·m (lbf ft)				46 (34)	
	Spindle nose	FLAT				Ø110 (4.3)	
	Spindle bearing diameter (Front)	mm (inch)				75 (3.0)	
	Spindle through hole diameter	mm (inch)				43 (1.7)	
	Min. spindle Indexing angle(C-axis)	deg				0.001	
Turret	No. of tool stations	ea		12(24 Position Index) {16}* 20 (0.8)			
	OD tool size	mm (inch)			32 / 20 (1.3 / 0.8)		
	Max. boring bar size	mm (inch)			0.11		
	Turret Indexing time (1 station swivel)	s			6000		
	Max. Rotary tool speed	r/min			3.7 (5)		
	Rotary tool motor power	kW(Hp)					
Tailstock	Tailstock travel	mm (inch)		560 (22.0)		-	
	Quill diameter	mm (inch)		65 (2.6)		-	
	Quill travel	mm (inch)		80 (3.1)		-	
	Quill bore taper	MT		MT#4		-	
Power source	Electric power supply(rated capacity)	kVA		28.22		34.09	
Machine Dimensions	Length	mm (inch)	2460 (96.9)	2850 (112.2)	2880 (113.4)	2850 (112.2)	2880 (113.4)
	Width	mm (inch)		1710 (67.3)			
	Height	mm (inch)		1920 (75.6)			
	Weight	kg (lb)	3500 (7700)	3600 (7920)	3850 (8470)	3900 (8580)	4150 (9130)
CNC	NC system			DOOSAN-FANUC i			

\* [ ] : option

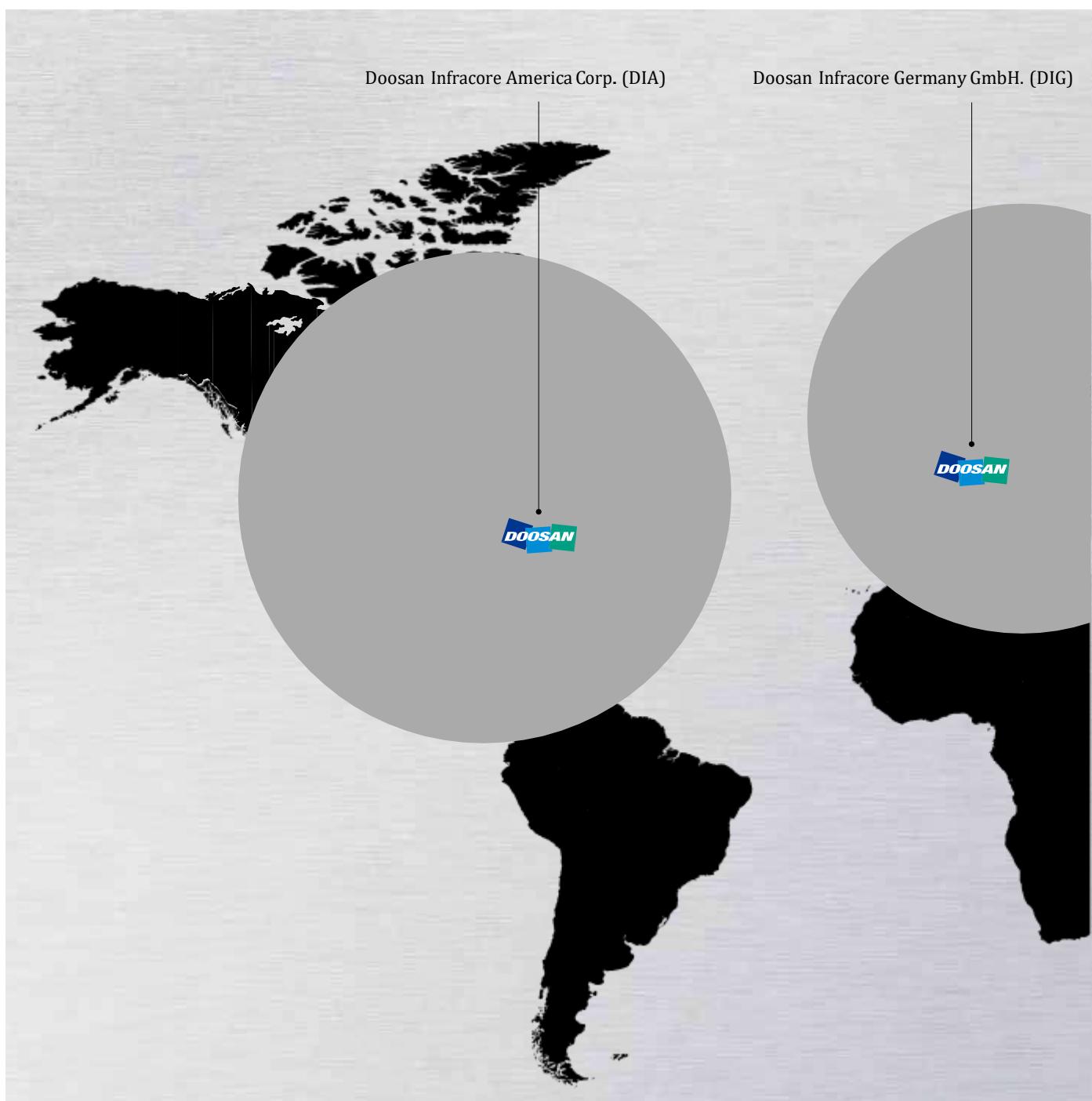
## NC unit specifications

**DOOSAN-  
FANUC i**

Standard    Optional    X N/A

NO.	Specification	Y/Y	LSY
1	Controlled axis	Controlled axes	4(X,Z,C,Y)
2		Axis control by PMC	●
3		Synchronous/Composite control (C1 & C2 Synchro Control)	X
4		Torque control	●
5		Inch/metric conversion	●
6		Stored limit check before move	●
7		Unexpected disturbance torque detection function	●
8		Position switch	●
9	Operation	DNC operation with memory card	●
10		Handle interruption	○
11		Manual handle retrace	○
12	Interpolation functions	Nano interpolation	●
13		Linear interpolation	●
14		Circular interpolation	●
15		Helical interpolation	●
16		Thread cutting, synchronous cutting	●
17		Thread cutting retract	●
18		Continuous threading	●
19		High-speed skip	Input signal is 8 points.
20		2nd/3rd/4th reference position return	G30
21	feed function	AI contour control I	○
22		AI contour control II	○
23		Rapid traverse block overlap	●
24	Program input	Optional block skip	9 pieces
25		Absolute/incremental programming	Combined use in the same block
26		Diameter/Radius programming	●
27		Automatic coordinate system setting	●
28		Workpiece coordinate system	G52 - G59
29		Chamfering/Corner R	●
30		Custom macro	●
31		Addition of custom macro common variables	#100 - #199, #500 - #999
32		Interruption type custom macro	●
33		Canned cycle	●
34		Multiple repetitive cycles	G70~G76
35		Multiple repetitive cycles II	Pocket profile
36		Canned cycle for drilling	●
37		Coordinate system shift	●
38		Direct input of coordinate system shift	●
39		Pattern data input	●
40	Operation Guidance Function	EZ Guidei(Conversational Programming Solution)	●
41		EZ Operation package	●
42	Auxiliary/Spindle speed function	Constant surface speed control	●
43		Rigid tap	●
44	Tool function/Tool compensation	Arbitrary speed threading	○
45		Tool offset pairs	64-pairs
46		Tool offset pairs	99-pairs
47		Tool offset pairs	128-pairs
48		Tool offset pairs	200-pairs
49		Tool radius/Tool nose radius compensation	●
50		Tool geometry/wear compensation	●
51		Automatic tool offset	G36/G37
52		Direct input of offset value measured B	●
53		Tool life management	●
54	Accuracy compensation function	Backlash compensation for each rapid traverse and cutting feed	●
55		Stored pitch error compensation	○
56	Editing operation	Part program storage size & Number of registerable programs	1280M(512KB)_400 programs
57		Part program storage size & Number of registerable programs	2560M(1MB)_800 programs
58		Part program storage size & Number of registerable programs	5120M(2MB)_400 programs
59		Part program storage size & Number of registerable programs	5120M(2MB)_800 programs
60		Playback	●
61	Data input/output	Fast data server	○
62		External data input	●
63		Memory card input/output	●
64		USB memory input/output	●
65		Automatic data backup	○
66	Interface function	Embedded Ethernet	●
67		Fast Ethernet	○
68	Others	Display unit	10.4" color LCD
69	Robot interface	Robot interface with PMC I/O module	○
70		Robot interface with PROFIBUS-DP	○

# Responding to Customers Anytime, Anywhere



## Global Service Support Network

Corporations

**5**

Dealer Networks

**128**

Technical Centers

**21**

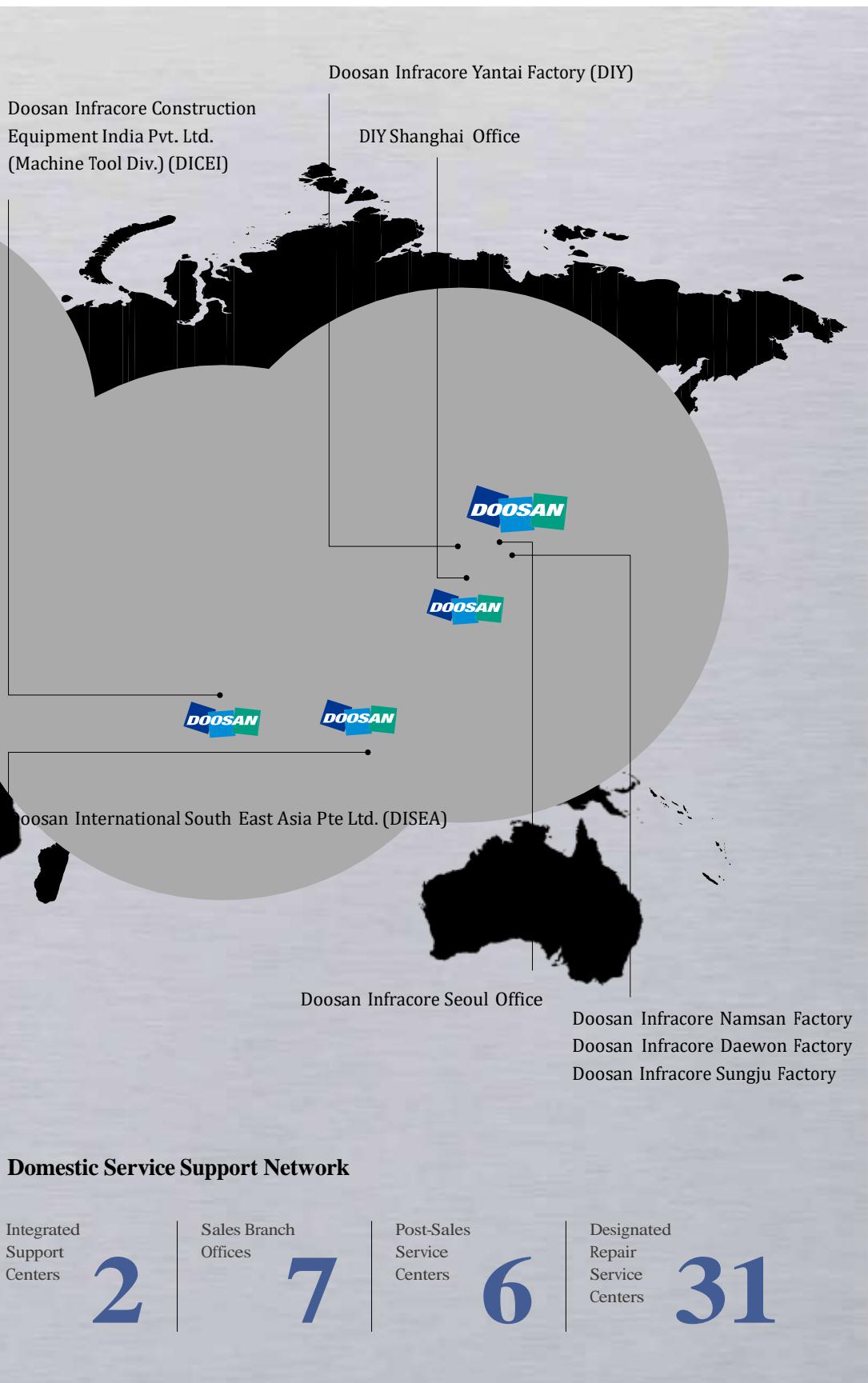
Factories

**4**

Technical Center: Sales Support, Service Support, Parts Support

## Doosan Machine Tools' Global Network, Responding to Customer's Needs nearby, Anytime, Anywhere

Doosan machine tools provides a system-based professional support service before and after the machine tool sale by responding quickly and efficiently to customers' demands. By supplying spare parts, product training, field service and technical support, we can provide top class support to our customers around the world.



## Customer Support Service

We help customers to achieve success by providing a variety of professional services from pre-sales consultancy to post-sales support.

### Supplying Parts



- Supplying a wide range of original Doosan spare parts
- Parts repair service

### Field Services



- On site service
- Machine installation and testing
- Scheduled preventive maintenance
- Machine repair

### Technical Support



- Supports machining methods and technology
- Responds to technical queries
- Provides technical consultancy

### Training



- Programming / machine setup and operation
- Electrical and mechanical maintenance
- Applications engineering

## Main Specifications

### Lynx 220Y



Description	UNIT	Lynx 220YA / LYA / LSYA	Lynx 220YC / LYC / LSYC
Max. turning dia.	mm (inch)	300 (11.8)	
Max. turning length	mm (inch)	300 / 510 / 510 (11.8 / 20.1 / 20.1)	
Standard chuck size	inch	6	8
Bar working dia.	mm (inch)	51 (2)	65 (2.6)
Max. spindle speed	r/min	6000	4500
Max. spindle power	kW (Hp)	15 (20)	
NC system	-		DOOSAN-FANUC i



## Doosan Machine Tools

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The specifications and information above-mentioned may be changed without prior notice.